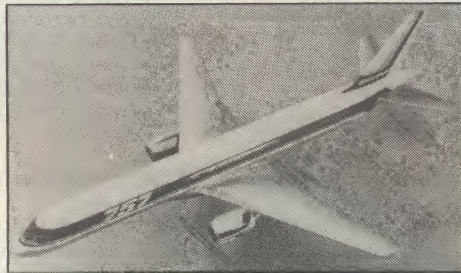


Aug 81



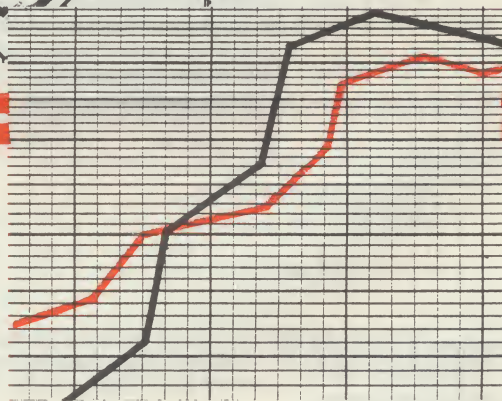
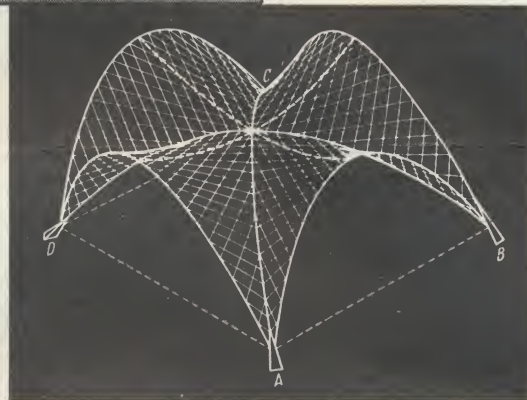
**Continually Updated—
Now in its Fifth Year!**

**A 3-day
Concentrated Seminar**

**Understanding
and Using**

Computer Graphics

**The Explosive New Technology
whose Time has Come!!**



Frost & Sullivan, Inc.
106 Fulton St., New York, N.Y. 10038
Tel. 212-233-1080

Oct. 13-15
Nov. 17-19
Jan. 5-7, '82

New York
Atlanta
San Francisco

Program

Understanding and Using Computer Graphics

NOW IN ITS FIFTH YEAR
UNDERSTANDING AND USING COMPUTER GRAPHICS REMAINS THE SEMINAR FOR THE BEGINNER AND THE EXPERIENCED ALIKE.

Reflecting the day-to-day experience of well-known computer graphics consultant, Carl Machover, **Understanding and Using Computer Graphics** is continually updated to cover today's practices and today's problems. Strong in basics, **Understanding and Using Computer Graphics** also covers practical information about hardware, software, systems and applications. Commercial products and real applications are stressed — insuring that the attendee gets information that can be used, immediately. Class discussion is encouraged — and two open workshops are included. Through our unique Participant Information form, course content is "slanted", where possible, to reflect students' specific interests. Here is what is covered in this **intensive 3-day seminar**.

PLUS:

Each attendee receives a complete set of course notes . . . more than 800 pages including background papers, supplier lists, equipment check lists, installation and planning materials, bibliographies, glossaries and a draft copy of Mr. Machover's new book about computer graphics.

I INTRODUCTION

- How did it all start?
- What is graphics?
 - non-graphics
 - limited graphics
 - line graphics
 - picture graphics
 - batch vs. interactive
- Hard copy vs. soft copy
- Dumb vs. smart vs. intelligent
- Host terminal, host-satellite
- Stand-alone vs. turnkey
- Time-sharing, networking, distributed processing
- Some human factors considerations

II What are Graphics Used For — A Quick Look

- Simple Data Plotting
- Complex Data Plotting
- Computer Aided Drafting (CAD)
 - Line Drawing (2D)
 - Line Drawing (3D)
 - Three kinds of 3D . . . plus 2½D!
- Computer Aided Design (CAD)
- Computer Aided Manufacture (CAM)
- Control/Monitor
- Picture
 - Image
 - Simulation
- Word/Picture Processing

III Why Graphics?

- Save time
- Save money
- Improve decision-making
- Can't do any other way . . . and to gain insights, improve productivity, stay competitive, reduce errors, improve product, reduce product cost, reduce manpower requirements, improve standardization, reduce space requirements, reduce turn-around time, improve drawing quality, improve communications between departments.
- Some typical justification examples

IV Elements of Computer Graphic Systems

- Host computer
- Communication
- User's workstation
- Input Devices
- System output devices
- Software

V How a Picture is Formed

- Deflection
 - Electromagnetic vs. electrostatic
 - Raster vs. random (what are the trade-offs?)
- Intensity (How many are really needed?)
- Beam cross section (resolution)
- Persistence
 - Long vs. short
 - Storage vs. refresh
- Color (is it really important?)
 - Penetration vs. shadow mask
 - Matrix (is the CRT dead?)
 - Plasma vs. LED vs. LCD

VI User's Station

- General Block
- Storage
 - Matrix
- Refresh
- Scan Converter
- Digital TV
 - Large Screen Displays
- Combination techniques
 - Storage plus refresh
 - TV plus stroke
- . . . who makes them, what are their characteristics, how do they compare, how much do they cost, what's coming next?

VI Input Devices

- Alphanumeric and function keyboards
- Cursor control
 - Thumb wheels
 - Trackball
 - Joystick (displacements and isometric)
- Mouse
- Light Pen
- Graphic tablets
- Touch panels
- Digitizers
 - Manual
 - Automatic
- Voice
- . . . who makes them, when and how they used, how do they compare, how much do they cost.

And . . . Two Open Workshops

Generally one will be directed to those specifically interested in CAD/CAM, and the other will be directed to those specifically interested in Business Graphics. (However, the workshop topics are subject to change, depending on the students' interests.) The workshop topics will include such subjects as health and safety issues, training, selecting initial jobs, graphics awareness among peers, supervisors and subordinates.

VIII Hard Copy

- Matrix printer
- Dry silver
- Electromechanical
- Electrostatic
- COM
- Laser
- Other color plotters
 - Pen
 - Jet
 - Laser
- Combination plotter/digitizer . . . who makes them, how do they compare (quality, speed, price per copy, resources required, archival quality).

IX Software

- Types
 - Graphic element
 - Graphic function
 - Picture
 - Application
- Plotting Software
- Application software
- Software standards (CORE, IGES)
 - . . . what's available, how can software be compared, how much do the packages cost, what resources are available

X Complete Systems

- Graphic desktop computers
- Stand alone systems
- Turnkey systems
- . . . who makes them, how do they compare (especially CAD/CAM), typical prices including new **low cost** configurations

XI Applications

- Analysis vs. Synthesis
- CAD/CAM
- MIS/Business Graphics
- Control
- Spectrum Analysis
- Other
- . . . specific applications illustrated with numerous slides and movies

XII Evaluation Techniques

- Terminals
- Systems
- . . . some evaluation techniques comparing terminals and some systems from an applications standpoint, including hardware, software, system, service and business considerations.
- How to get started

Why you should attend

With the introduction of new, low cost versatile hardware and software, Computer Graphics is rapidly becoming a work-a-day, time saving, dollar-saving tool. Computer Graphics shows charts, graphs, pictures and animated processes for maximum information and easiest comprehension. This course is for people who are now using, or making decisions about using Computer Graphics and its role in their organization. It will...

- Describe Computer Graphics
- Show how installing Computer Graphics can be justified
- Explain what Hardware, Software and Systems are available
- Give costs and performance comparisons
- Show how to get started
- And most important of all-

Demonstrate how Computer Graphics is being used in applications like your own

You should attend if you're involved in, or about to become involved in:

- Using Computer Graphics
- Computer Aided Design / Drafting / Manufacture
- Systems Analysis and Design
- Buying or selling Computer Graphics Equipment
- Engineering Design, Analysis and Planning
- Financial Management and Analysis
- Data Processing
- Management Information Systems

*Don't wait. Make your reservations.
You and your company will be glad you did.*

See following page for complete information.

Leader's Profile



Carl Machover is an internationally recognized computer graphics expert. He is head of Machover Associates Corporation, Consultants who provide a broad range of management, engineering, marketing and financial services to computer graphics users

and suppliers. Among a long list of clients served are such organizations as American Can, Boeing, Borg Warner, Calcomp, Gould, IBM, INA, Polaroid, Sanders and Xerox.

He is on the Board of Directors of CDVS, and the Editorial Review Board of "Computer Graphics" and the IEEE "Computer Graphics and Applications", and has written dozens of articles on computer graphics for a wide variety of important periodicals, and has lectured on graphics throughout the world. Mr. Machover is an Adjunct Professor of Computer Graphics at the Rensselaer Polytechnic Institute. He was formerly Executive Vice President of Information Displays, Inc., a leading computer graphics manufacturer, where, for nearly two decades, he worked with users in implementing new applications and systems. He graduated as an electrical engineer from the Rensselaer Polytechnic Institute and has over two decades of computer graphics experience. He is a fellow of the Society for Information Display (National President for two years), Association for Computing Machinery (SIGGRAPH), the Institute of Electrical and Electronics Engineers, the American Institute of Design and Drafting and the National Society of Professional Engineers.

What Participants say about the Course

"I've been to several other seminars; this is by far the best! Mainly due to Mr. Machover's ability to convey his thoughts, i.e., extremely well."

Richard Meyer, Interactive Data Corp., Waltham, MA

"I enjoyed the seminar very much and feel that it was time well spent."

David C. Peters, Chevron Oil Field Research Co., LaHabra, CA

"We are planning to install a CAD/CAM system for evaluation. The course has helped us avoid making a number of basic mistakes."

Jerry V. Scrivo, Excello Corp., Davidson Rubber Division, Dover, NH

"Carl certainly knows about the state-of-the-art in graphics hardware and has keen insight into the industry."

David P. Makris, IBM, Poughkeepsie, NY

"Mr. Machover's knowledge and ability to communicate that knowledge with attendees is excellent."

Wayne M. Bouhware, Gould, Inc., Cleveland, OH

"Carl Machover is an excellent presenter. He knows the field of interactive computer graphics."

Roland J. Boucher, Airco Systems Division, Wilmington, MA

"Would not recommend anyone but Carl to an associate interested in Computer Graphics."

John A. Hayes, Connecticut General Insurance Co., Hartford CN

General Information

3 Ways to Register Fast

1. By Phone

Call (212) BE 3-1080 and ask for Bob Sanzo. You'll get immediate confirmation of your registration.

2. By Mail

Please fill out and mail the Registration Form below as soon as possible.

3. By Telex

TWX 235986. Please give Seminar Title, Date, your name, title, company, address and phone of each registrant.

Schedule

Seminar sessions are from 9:00 am to 12:30 pm and 1:45 pm to 5:00 pm. There will be short coffee breaks each morning and afternoon.

Registration Fees

\$700 -Individual Fee, including all handout material, **three full luncheons** and coffee breaks.

\$650 -For each additional attendee from same company. It is extremely worthwhile to send your **team**. During the sessions, they'll compare notes and reinforce their thinking on how the ideas and concepts presented relate to the company's specific problems. Back home, they'll be able to implement and reinforce each other's efforts.

Tax Deduction for all Educational Expenses

Treasury regulation § 1.162-5 permits an income tax deduction for educational expenses (registration fees and cost of travel, meals and lodging) undertaken to: (1) maintain or improve skills required in one's employment or other trade or business, or (2) meet express requirements of an employer or a law imposed as a condition to retention of employment, job status or rate of compensation.

Diploma

Each attendee receives a laminated plastic diploma affirming that 1.9 CEU's have been achieved. CEU stands for Continuing Education Unit, which is a nationwide standard, recognized and respected on a rapidly increasing scale, as a basis of comparison for higher education. Recorded on a permanent transcript, which may be transmitted only with your authorization, CEU's may be utilized as evidence of increased performance capabilities and enhanced knowledge.

Transfers and Cancellations

Transfers or substitutions may be made at any time. A confirmed registration may be cancelled without cost up to one week before the start of the Seminar. After this date, there will be a \$50 service charge.

Frost & Sullivan is a well-known leader in the field of executive education, research and development through the media of seminars, conferences, reports and cassettes.

Understanding and Using Computer Graphics

Please cut along this line and return

Understanding and Using Computer Graphics

Oct. 13-15	New York	☐	Please check
Nov. 17-19	Atlanta	☐	which seminar
Jan. 5-7 '82	San Francisco	☐	you will attend

Name and Title of Participants (Print for Nameplate and Certificate)

1. Name _____ Title _____

2. Name _____ Title _____

3. Name _____ Title _____

Company _____
(Please use Full Name)

Division _____

Street _____ Tel. No. _____

City _____ State _____ Zip _____

☐ CHECK ENCLOSED
\$700 Individual
\$650 Each additional
Participant

☐ Please Bill Company



Frost & Sullivan

Dept. C-2

106 Fulton Street

New York, N.Y. 10038

Telephone: 212-233-1080

Telex: 235986

registration form